Claims

What is claimed is:

1. A method of assessing whether a patient is afflicted with prostate cancer, the method comprising comparing:

a) the level of expression of a marker in a patient sample, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6, and

b) the normal level of expression of the marker in a control non-prostate cancer sample,

wherein a significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with prostate cancer.

2. The method of claim 1, wherein the marker corresponds to a secreted protein.

3. The method of claim 1, wherein the marker corresponds to a transcribed polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

4. The method of claim 1, wherein the sample comprises cells obtained from the patient.

5. The method of claim 4, wherein the sample is a prostate tissue sample.

6. The method of claim 4, wherein the cells are in a fluid selected from the group consisting of blood fluids, semen, prostate fluid, lymph and urine.

7. The method of claim 1, wherein the level of expression of the marker in the sample is assessed by detecting the presence in the sample of a protein or protein fragment corresponding to the marker.

8. The method of claim 7, wherein the presence of the protein or protein fragment is detected using a reagent which specifically binds with the protein or protein fragment.

9. The method of claim 8, wherein the reagent is selected from the group consisting of an antibody, an antibody derivative, and an antibody fragment.

10. The method of claim 1, wherein the level of expression of the marker in the sample is assessed by detecting the presence in the sample of a transcribed polynucleotide or portion thereof, wherein the transcribed polynucleotide comprises the marker.

11. The method of claim 10, wherein the transcribed polynucleotide is an mRNA.

12. The method of claim 10, wherein the transcribed polynucleotide is a cDNA.

13. The method of claim 10, wherein the step of detecting further comprises amplifying the transcribed polynucleotide.

14. The method of claim 1, wherein the level of expression of the marker in the sample is assessed by detecting the presence in the sample of a transcribed polynucleotide which anneals with the marker or anneals with a portion of a polynucleotide wherein the polynucleotide comprises the marker, under stringent hybridization conditions.

15. The method of claim 1, wherein the level of expression of the marker in the sample differs from the normal level of expression of the marker in a patient not afflicted with prostate cancer by a factor of at least about 2.

16. The method of claim 1, wherein the level of expression of the marker in the sample differs from the normal level of expression of the marker in a patient not afflicted with prostate cancer by a factor of at least about 5.

17. The method of claim 1, comprising comparing:

a) the level of expression in the sample of each of a plurality of markers independently selected from the markers listed in Tables 1-1 to 6, and

b) the normal level of expression of each of the plurality of markers in samples of the same type obtained from control humans not afflicted with prostate cancer,

wherein the level of expression of more than one of the markers is significantly altered, relative to the corresponding normal levels of expression of the markers, is an indication that the patient is afflicted with prostate cancer.

18. The method of claim 17, wherein the level of expression of each of the markers is significantly altered, relative to the corresponding normal levels of expression of the markers, is an indication that the patient is afflicted with prostate cancer.

19. The method of claim 17, wherein the plurality comprises at least three of the markers.

20. The method of claim 17, wherein the plurality comprises at least five of the markers.

21. A method for monitoring the progression of prostate cancer in a patient, the method comprising:

a) detecting in a patient sample at a first point in time, the expression of a marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6;

b) repeating step a) at a subsequent point in time; and

c) comparing the level of expression detected in steps a) and b), and therefrom monitoring the progression of prostate cancer.

Replacement Sheet

22. The method of claim 21, wherein the marker corresponds to a secreted protein.

23. The method of claim 21, wherein the marker corresponds to a transcribed polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

24. The method of claim 21, wherein the sample comprises cells obtained from the patient.

25. The method of claim 24, wherein the patient sample is a prostate tissue sample.

26. The method of claim 21, wherein between the first point in time and the subsequent point in time, the patient has undergone surgery to remove prostate tissue.

27. A method of assessing the efficacy of a test compound for inhibiting prostate cancer in a patient, the method comprising comparing:

a) expression of a marker in a first sample obtained from the patient and exposed to the test compound, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6, and

b) expression of the marker in a second sample obtained from the patient, wherein the sample is not exposed to the test compound,

wherein a significantly lower level of expression of the marker in the first sample, relative to the second sample, is an indication that the test compound is efficacious for inhibiting prostate cancer in the patient.

28. The method of claim 27, wherein the first and second samples are portions of a single sample obtained from the patient.

29. The method of claim 27, wherein the first and second samples are portions of pooled samples obtained from the patient.

30. A method of assessing the efficacy of a therapy for inhibiting prostate cancer in a patient, the method comprising comparing:

a) expression of a marker in the first sample obtained from the patient prior to providing at least a portion of the therapy to the patient, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6, and

b) expression of the marker in a second sample obtained from the patient following provision of the portion of the therapy,

wherein a significantly lower level of expression of the marker in the second sample, relative to the first sample, is an indication that the therapy is efficacious for inhibiting prostate cancer in the patient.

31. A method of selecting a composition for inhibiting prostate cancer in a patient, the method comprising:

a) obtaining a sample comprising cancer cells from the patient;

b) separately exposing aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6; and

d) selecting one of the test compositions which alters the level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

32. A method of inhibiting prostate cancer in a patient, the method comprising:

a) obtaining a sample comprising cancer cells from the patient;

b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

c) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6; and

d) administering to the patient at least one of the test compositions which alters the level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

33. A kit for assessing whether a patient is afflicted with prostate cancer, the kit comprising a marker selected from the group consisting of the markers listed in Tables 1-1 to 6.

34. A kit for assessing the presence of prostate cancer cells, the kit comprising a nucleic acid probe wherein the probe specifically binds with a transcribed polynucleotide corresponding to a marker selected from the group consisting of the markers listed in Tables 1-1 to 6.

35. A kit for assessing the suitability of each of a plurality of compounds for inhibiting prostate cancer in a patient, the kit comprising:

a) the plurality of compounds; and

b) a reagent for assessing expression of a marker selected from the group consisting of the markers listed in Tables 1-1 to 6.

36. A method of making an isolated hybridoma which produces an antibody useful for assessing whether a patient is afflicted with prostate cancer, the method comprising:

isolating a protein or protein fragment corresponding to a marker selected from the group consisting of the markers listed in Tables 1-1 to 6;

immunizing a mammal using the isolated protein or protein fragment;

isolating splenocytes from the immunized mammal;

fusing the isolated splenocytes with an immortalized cell line to form hybridomas; and

screening individual hybridomas for production of an antibody which specifically binds with the protein or protein fragment to isolate the hybridoma.

37. An antibody produced by a hybridoma made by the method of claim 36.

38. A kit for assessing the presence of human prostate cancer cells, the kit comprising an antibody, wherein the antibody specifically binds with a protein or protein fragment corresponding to a marker selected from the group consisting of the markers listed in Tables 1-1 to 6.

39. A method of assessing the prostate cell carcinogenic potential of a test compound, the method comprising:

a) maintaining separate aliquots of prostate cells in the presence and absence of the test compound; and

b) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6,

wherein a significantly altered level of expression of the marker in the aliquot maintained in the presence of the test compound, relative to the aliquot maintained in the absence of the test compound, is an indication that the test compound possesses human prostate cell carcinogenic potential.

40. A kit for assessing the prostate cell carcinogenic potential of a test compound, the kit comprising prostate cells and a reagent for assessing expression of a marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6.

41. A method of inhibiting prostate cancer in a patient at risk for developing prostate cancer, the method comprising inhibiting expression of a gene corresponding to a marker selected from the markers listed in Tables 1-1 to 6, wherein the gene is overexpressed in prostate cancer.

42. The method of claim 41, further comprising the step of providing to cells of the patient an antisense oligonucleotide complementary to a polynucleotide corresponding to a marker selected from the markers listed in Tables 1-1 to 6.

43. A method of inhibiting prostate cancer in a patient at risk for developing prostate cancer, the method comprising increasing expression of a gene corresponding to a marker selected from the markers listed in Tables 1-1 to 6, wherein the gene is underexpressed in prostate cancer or expressed in normal prostate tissue.

44. A method for determining whether prostate cancer has metastasized in a patient, the method comprising comparing:

a) the level of expression of a marker in a patient smaple, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6, and

b) the normal level or non-metastatic level of expression of the marker in a control sample

wherein a significant difference between the level of expression in the patient sample and the normal level or non-metastatic level is an indication that the prostate cancer has mestastasized.

45. The method of claim 44, wherein the marker corresponds to a secreted protein.

46. The method of claim 44, wherein the marker corresponds to a transcribed polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

47. The method of claim 44, wherein the sample comprises cells obtained from the patient.

48. The method of claim 47, wherein the patient sample is a prostate tissue sample.

49. A method for assessing the aggressiveness or indolence of prostate cancer comprising comparing:

a) the level of expression of a marker in a sample, wherein at least one marker is selected from the markers of Tables 1-1 to 6, and

b) the normal level of expression of the marker in a control sample,

wherein a significant difference between the level of expression in the sample and the normal level is an indication that the cancer is aggressive or indolent.

50. The method of claim 49, wherein the marker corresponds to a secreted protein.

51. The method of claim 49, wherein marker corresponds to a transcribed polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

52. The method of claim 49, wherein the sample comprises cells obtained from the patient.

53. The method of claim 52, wherein the patient sample is a prostate tissue sample.

54. A system for identifying selected polynucleotide records that identify a prostate cancer cell, the system comprising:

a digital computer;

a database coupled to the computer;

a database coupled to the database server having data stored therein, the data comprising records of data comprising a polynucleotide corresponding to a marker from the markers in Tables 1-1 to 6; and

a code mechanism for applying queries based upon a desired selection criteria to the data file in the database to produce reports of polynucleotide records which match the desired selection criteria.

55. A method for detecting a prostate cancer cell, using a computer having a processor, memory, display, and input/output devices, the method comprising the steps of:

a) providing a sequence of a polynucleotide isolated from a sample suspected of containing a prostate cancer cell;

b) providing a database comprising records of data comprising a polynucleotide corresponding to a marker from the markers in Tables 1-1 to 6; and

c) using a code mechanism for applying queries based upon a desired selection criteria to the data file in the database to produce reports of polynucleotide records of step a) which provide a match of the desired selection criteria of the sequences in the database of step b), the presence of a match being a positive indication that the polynucleotide of step 1) has been isolated from a cell that is a prostate cancer cell.